

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Dec. 24, 2009 for claims 21 - 24 has been entered. Claims 1 – 20 has been cancelled.

Specification

2. The amendment filed on Dec. 4, 2009 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The term “weight-related-information” is found in amendment of the specification, which was not in the original specification.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 21 and 23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject

matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The term “weight-related-information” is found in claims 21 and 23, the specification does not describe the subject matter.

Claims 22 and 24 are also rejected under 35 U.S.C. 112, first paragraph due to their dependency on claims 21 and 23 respectively.

Applicant is required to cancel the new matter in the reply to this Office Action.

Response to Arguments

4. Applicant's arguments with respect to claims 21 - 24 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions

covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 21 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trikkonen US PGPub: US 2004/0002364 A1 Jan. 1, 2004, and in view of Walton US PGPub: US 2003/0125040 A1 Jul. 3, 2003.

Regarding claim 21, Trikkonen discloses,

a radio communication method for a radio communication system (fig. 2) in which output signals are generated from a plurality of information signals and then transmitted to a system of communication partner from a plurality of antennas

(fig. 2, item 105), comprising

receiving control information transmitted by the system of the communication partner (paragraph 91, 304, 307, fig. 4a and 4b; the loop transmissions contain control information);

determining, based on the received control information, a first weight corresponding to the plurality of antennas for one of the plurality of information signals modulated by a first modulation scheme and encoded by a first encoding method, and a second weight corresponding to the plurality of antennas for another one of the plurality of information signals modulated by a second modulation scheme and encoded by a second encoding method (paragraphs 322, 140, and 309, at the same time paragraph 108 mentions the use of different modulations; paragraph 118, 256, 248, 252);

generating a first operation result by multiplying the one of the plurality of information signals by the first weight, and generating a second operation result by multiplying the another one of the plurality of information signals by the second weight (paragraphs 322, 140, and 136); and

generating, based on the first operation result and the second operation result, a plurality of the output signals each corresponding to one of the plurality of

antennas, and transmitting the plurality of the output signals to the system of the communication partner (paragraphs 126 and 17),
wherein the control information comprises a weight-related-information on the first and second weight and a transmission format information, on modulation scheme and encoding method, corresponding to the weight-related-information (paragraphs 140,136, 322, 140, and 309 and 322, at the same time paragraph 108 mentions the use of different modulations; paragraph 118, 256, 248, 252), the modulation scheme and encoding method corresponding to the transmission format information being determined based on the signal quality (paragraphs 87 – 90, 95, 96, 184, 193, 204, 290, 313) calculated on the assumption that the output signals of the plurality of antennas are generated utilizing the weights corresponding to the weight-related- information (paragraphs 4, 5, 129, 134, 136, 149),

but, does not clearly teach, the information is “transmitted simultaneously”.

Walton teaches, multiple-access multiple-input multiple-output MIMO communication system, and simultaneous transmission. The data streams may be simultaneously transmitted by the base station from transmit antennas and targeted to one or more terminals, each equipped with receive antennas (Figs. 1 - 11C, paragraphs 4, 10 – 15, 72, 81, 82, 242, 338, 353, 385, 462, 467, 509).

It would have been obvious to one of ordinary skill in the art, at the time of invention, to modify the transmitting and receiving method of Trikkonen (Trikkonen, Fig. 2), wherein, the base transceiver station 2 of Trikkonen, would have incorporated the simultaneously transmission by the base station of Walton (Walton (Figs. 1 – 11C, paragraphs 4, 10 – 15, 72, 81, 82, 242, 338, 353, 385, 462, 467, 509), for the data rate can be increased by transmitting independent information streams from different antennas but using the same channel as defined by frequency, time slot and/or spreading code (Trikkonen, paragraphs 4, 5, 6 and Walton, paragraphs 4, 72, 467).

Regarding claim 22, Trikkonen discloses,

the radio communication method according to claim 21, wherein the control information further comprises information to select the first and second weight from a greater number of weight candidates than the antennas (the practical rank number PRN thresholds can be selected by an operator on a cell by cell basis and based on either forecasted information or measured interference levels or traffic statistics. Within a cell, different users may have different thresholds, based on e.g. the type of subscription, and the equipment the user makes the communications link with - paragraphs 89, 91, 122, 304, 307, fig. 4a and 4b; the loop transmissions contain control information).

Regarding claim 23, Trikkonen discloses,

a radio communication system (fig. 2) in which output signals are generated from a plurality of information signals and then transmitted to a system of communication partners from a plurality of antennas (fig. 2, item 105), comprising:

a reception device for receiving control information transmitted by the system of the communication partner (paragraph 91, 304, 307, fig. 4a and 4b; the loop transmissions contain control information);

a weight determining device for determining, based on the received control information, a first weight corresponding to the plurality of antennas for one of the plurality of information signals modulated by a first modulation scheme and encoded by a first encoding method, and a second weight corresponding to the plurality of antennas for another one of the plurality of information signals modulated by a second modulation scheme and encoded by a second encoding method (paragraphs 322, 140, and 309, at the same time paragraph 108 mentions the use of different modulations; paragraph 118, 256, 248, 252);

an operation device for generating a first operation result by multiplying the one of the plurality of information signals by the first weight, and generating a second

operation result by multiplying the another one of the plurality of information signals by the second weight (paragraphs 322, 140, and 136); and

a transmission device for generating, based on the first operation result and the second operation result, a plurality of the output signals each corresponding to one of the plurality of antennas, and transmitting the plurality of the output signals to the system of the communication partner (paragraphs 126 and 17),

wherein the control information comprises a weight-related-information on the first and second weight and a transmission format information, on modulation scheme and encoding method, corresponding to the weight-related-information (paragraphs 140,136, 322, 140, and 309 and 322, at the same time paragraph 108 mentions the use of different modulations; paragraph 118, 256, 248, 252), the modulation scheme and encoding method corresponding to the transmission format information being determined based on the signal quality (paragraphs 87 – 90, 95, 96, 184, 193, 204, 290, 313) calculated on the assumption that the output signals of the plurality of antennas are generated utilizing the weights corresponding to the weight-related- information (paragraphs 4, 5, 129, 134, 136, 149),

but, does not clearly teach, the information is “transmitted simultaneously”.

Walton teaches, multiple-access multiple-input multiple-output MIMO

communication system, and simultaneous transmission. The data streams may be simultaneously transmitted by the base station from transmit antennas and targeted to one or more terminals, each equipped with receive antennas (Figs. 1 - 11C, paragraphs 4, 10 – 15, 72, 81, 82, 242, 338, 353, 385, 462, 467, 509).

It would have been obvious to one of ordinary skill in the art, at the time of invention, to modify the transmitting and receiving method of Trikkonen (Trikkonen, Fig. 2), wherein, the base transceiver station 2 of Trikkonen, would have incorporated the simultaneously transmission by the base station of Walton (Walton (Figs. 1 – 11C, paragraphs 4, 10 – 15, 72, 81, 82, 242, 338, 353, 385, 462, 467, 509), for the data rate can be increased by transmitting independent information streams from different antennas but using the same channel as defined by frequency, time slot and/or spreading code (Trikkonen, paragraphs 4, 5, 6 and Walton, paragraphs 4, 72, 467).

Regarding claim 24, Trikkonen discloses,

the radio communication system according to claim 23, wherein the control information further comprises information to select the first and second weight from a greater number of weight candidates than the antennas (the practical rank number PRN thresholds can be selected by an operator on a cell by cell basis and based on either forecasted information or measured interference levels or

traffic statistics. Within a cell, different users may have different thresholds, based on e.g. the type of subscription, and the equipment the user makes the communications link with - paragraphs 89, 91, 122, 304, 307, fig. 4a and 4b; the loop transmissions contain control information).

Contact Information

Any inquiry concerning this communication from the examiner should be directed to Nimesh Patel at (571) 270-1228, normally reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rafael, Perez-Gutierrez, can be reached at (571) 272-7915.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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